# Policy issues of ocean-based CDR: Ocean Governance

**Barbara Neumann,** Lina Röschel
Research Institute for Sustainability – Helmholtz Centre Potsdam (RIFS)

# Global governance of ocean-based negative emission technologies (NETs)

**Guiding questions:**

- How are emerging **ocean-based NETs** considered and how do they correspond to the current **ocean governance frameworks**?

- What are **challenges and opportunities** within this framework?

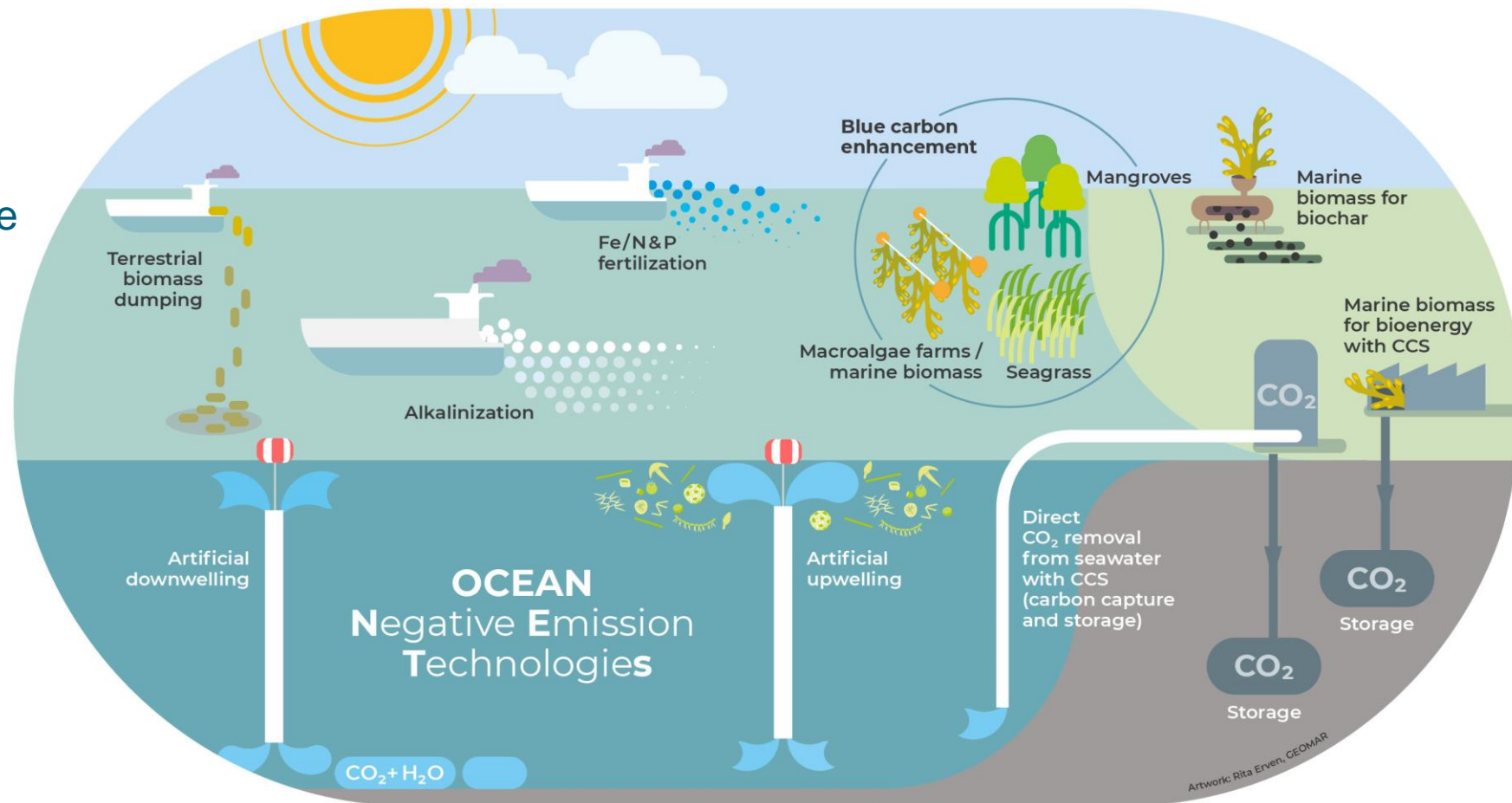- What entails **'good governance'** of ocean-based NETs?



*Figure 1: **Overview of ocean-based negative emissions technologies**, Rita Erven, GEOMAR/OceanNETs*

# Governance framework of ocean-based NETs (ONETs)



Alkalinization

Fertilization

Direct carbon removal & storage

Upwelling

Downwelling

Blue Carbon

Biomass for biochar

Biomass dumping

8 ONETs

*Questionnaire Literature review*

1. Knowledge base

*Mapping of essential ocean variables and marine/coastal ecosystem services*

2. Qualitative description of impact of ONETs on the ocean

Direct intentional / unintentional impact

Indirect intentional / unintentional impact

*Screening of 452 multilateral agreements*

3. Identification of ONET governance framework

*Review of legislative texts*

4. Analysis of ONET governance framework

Direct (explicit) governance

Implicit governance

Indirect governance

**Direct governance**

Direct (explicit):
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (**London Convention**), and the 1996 Protocol (**London Protocol**)

Implicit:
- UN Convention on the Law of the Sea (**UNCLOS**)
- UN Framework Convention on Climate Change (**UNFCCC**)
- Convention on Biological Diversity (**CBD**)

**Indirect governance**
- Convention on Migratory Species (**CMS**)
- **UNESCO** World Heritage Convention
- **UN Fish Stocks Agreement**
- **RAMSAR** Convention
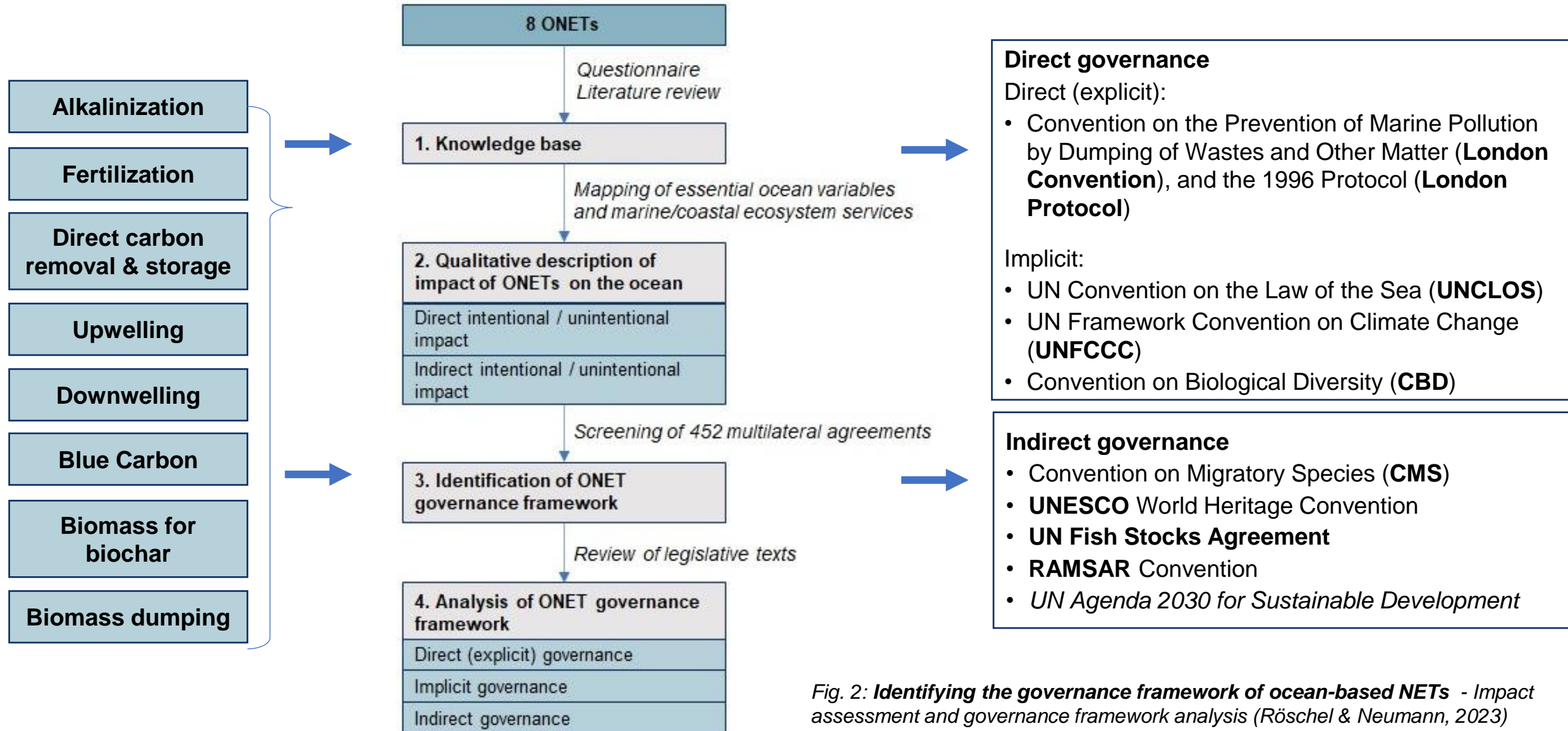- *UN Agenda 2030 for Sustainable Development*

*Fig. 2: **Identifying the governance framework of ocean-based NETs** - Impact assessment and governance framework analysis (Röschel & Neumann, 2023)*

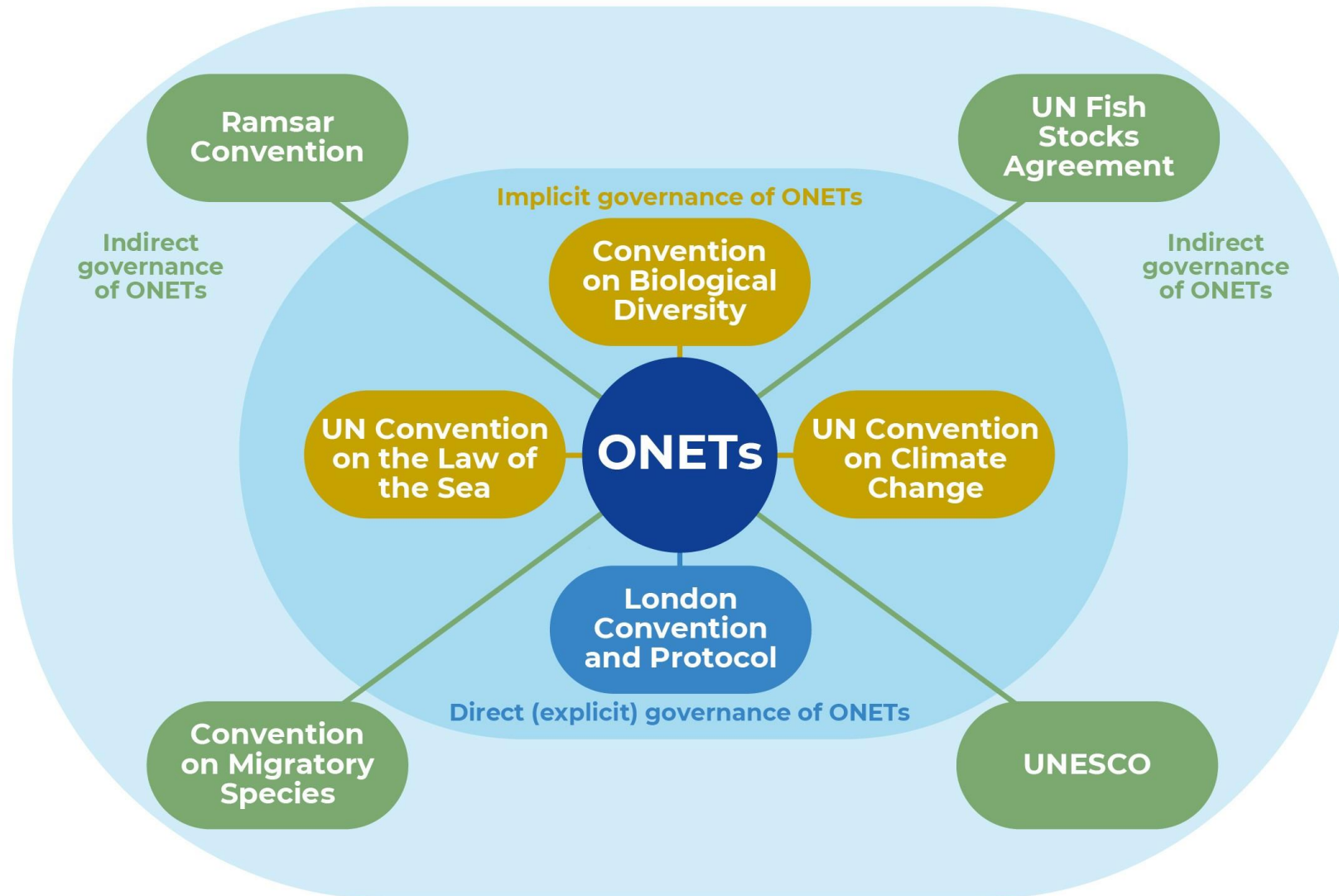# Governance framework of ocean-based NETs (ONETs)



Figure 3: **Overview of the identified direct, implicit and indirect governance framework for ocean-based NETs** (designed by Rita Erven, conceptualized by Röschel & Neumann, 2023)

# Key challenges for ocean governance and NETs

**1. Policy coherence**

- Lack of consideration of (potential) co-benefits and trade-offs in decision-making

- Lack of cohesion within the ocean governance regime; lack of integration between frameworks (e.g., ocean and climate)

**2. Transboundary challenges**

- Effects of ocean-based NETs potentially beyond point of entry; uncertainties

- Challenges between national, regional and global governance regimes and horizontal challenges

**3. (Deep) uncertainty**

- Ocean and climate are complex and interconnected; many unknowns and uncertainties, including on NETs

- Wicked problem situation; decision-making is subject to deep uncertainty (and therefore cannot be truly risk free)

# 'Good Governance' of ocean-based NETs - Conclusions

- ➤ A **holistic approach** is needed to governing the deployment of ocean-based NETs

    - ➤ Case-by-case assessments of impacts are not appropriate for good decision-making; a **robust assessment of cumulative (unintended) impacts of ocean-based NETs on the ocean and potential trade-offs** must be streamlined into decision-making processes.

    - ➤ Include **environmental, economic and social aspects** to ensure maximal benefits at minimal trade-offs for "people and planet".

    - ➤ A comprehensive governance approach should **consider a wider framework of direct, implicit and indirect governance elements**, **key principles** of ocean governance and codes of conduct for marine geoengineering, but also take up principles of "good" governance.

- ➤ A **robust and foresight-oriented governance framework** that aims for integration between different frameworks in place (or sets up a new, overarching structure for rigorous oversight and integration of principles) seems mandatory..

- ➤ **Principles of 'good governance'** (effective, equitable, inclusive, responsive) should guide the way in order to establish a meaningful and widely acceptable framework for navigating potential deployment of ocean-based NETs.

# Participating institutions
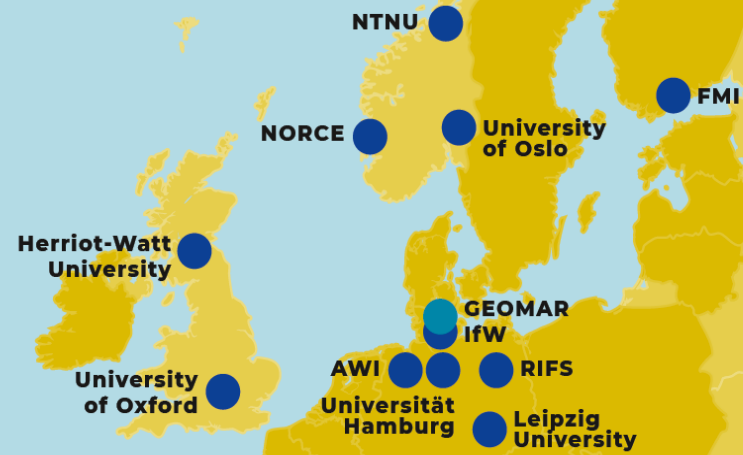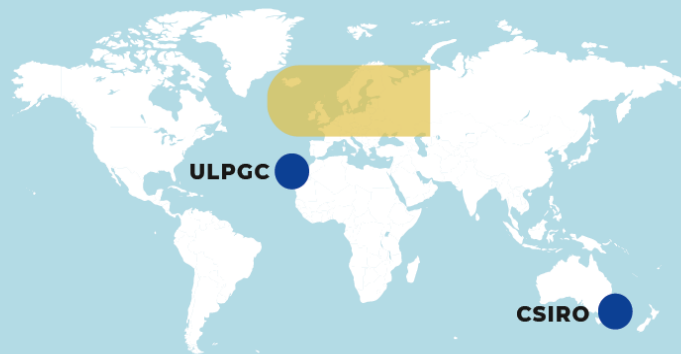


GEOMAR
Coordinator
GEOMAR Helmholtz Centre for Ocean Research Kiel

Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research

Commonwealth Scientific and Industrial Research Organisation

Heriot-Watt University

Finnish Meteorological Institute

Kiel Institute for the World Economy

Research Institute for Sustainability

Norwegian Research Centre

Norwegian University of Science and Technology

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